

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD  
SOUTH DAKOTA SUPPLEMENTS *ITALICIZED***

**FISH STREAM IMPROVEMENT**

(ft.)

**CODE 395**

**DEFINITION**

Improving a stream channel to make a new fish habitat or to enhance an existing habitat.

**PURPOSES**

*Provide suitable habitat for desired aquatic species and diverse aquatic communities.*

*Provide channel morphology and associated riparian characteristics important to desired aquatic species.*

*Provide aesthetic values and recreation opportunities associated with stream habitats such as angling and fish viewing*

**CONDITIONS WHERE PRACTICE APPLIES**

*Streams where habitat deficiencies limit survival, growth, reproduction, and/or diversity of aquatic species in relation to the potential of the stream type.*

**CRITERIA**

***General Criteria Applicable To All Purposes Named***

*All measures implemented under this practice shall comply with all applicable federal, state, and local laws, rules, and regulations. All required permits will be obtained prior to installation of any stream improvement measures.*

*Manage adjoining riparian corridors in a vegetated condition and width suitable for desired ecological benefits such as stream temperature moderation, recruitment of instream large wood and fine organic debris, stream bank stability, and flood attenuation.*

*Stream-dependent species shall be considered in planning. Threatened, endangered, candidate, rare, and other sensitive species (further defined as "species of concern") shall be carefully considered in aquatic habitat improvement and included in the management plan. The South Dakota Natural Heritage Program tracks the included species. The list is available on the South Dakota Game, Fish and Parks internet page. No plan shall have long-term adverse effects on threatened or endangered species or species of concern.*

*All activities will occur within the respective state guidelines on timing with regard to breeding and nesting seasons of aquatic and terrestrial organisms. Contact the state biologist for guidelines on individual streams and species affected.*

*Where practical, natural instream habitat and channel forming processes such as natural meandering and floodplain functions will be restored or maintained.*

*Stream habitat management options will be designed and installed to blend with the natural landscape.*

*Structures installed using this practice for any of the purposes will not reduce channel capacity to the extent that excessive bank erosion or unintentional lateral migration of flow is induced.*

*Instream structure design (such as the uses of cable) will consider and be compatible with the dynamic nature of rivers and recreational and other uses of the stream corridor.*

*When present, livestock will be managed in the stream and riparian area in such a manner as to prevent excessive bank trampling, forage utilization and nutrient input.*

Conservation practice standards are reviewed periodically and updated if needed. The current version of this standard is posted on our website at [www.sd.nrcs.usda.gov](http://www.sd.nrcs.usda.gov) or may be obtained at your local Natural Resources Conservation Service.

*Planned stream habitat improvements will:*

*Be based on a formal assessment of stream, watershed, and riparian conditions. The assessment shall evaluate channel morphology, geomorphic setting, watershed condition, aquatic species, riparian and floodplain conditions, and any habitat limitations including restriction of upstream and downstream movement of aquatic species (see References). All pertinent physical, biological, and chemical conditions will be included in the assessment.*

*Emphasize the establishment of a functioning stream-riparian-system consistent with the watershed conditions and geomorphic setting.*

*List the aquatic species and life history stage(s) for which the stream is being managed.*

*Provide fish passage upstream and downstream and allow movement of other aquatic species and stream organic matter to the extent possible.*

***Additional Criteria Applicable to Providing Suitable Habitat, Channel Morphology, and Associated Riparian Characteristics***

*Instream structures will be designed to facilitate establishment and viability of riparian plants.*

*Structural stream improvement measures applied will be compatible with geomorphic stream type.*

*Incorporation of these stream channel criteria will generally involve restoration of an appropriate channel width-to-depth ratio, suitable riffle-pool complexes, well-vegetated banks, and/or stream length-gradient relationships in a meandering stream consistent with local conditions and geomorphic stream type (see References).*

*The stream channel being managed under this practice should:*

*Be hydrologically connected to its floodplain and associated wetlands where physically possible and geomorphically appropriate.*

*Reflect sediment transport processes characteristic of the potential channel type.*

*Have well vegetated banks and a healthy riparian root zone.*

*Have substrates suitable for spawning and/or rearing of desired aquatic species*

***Additional Criteria Applicable To Provide Aesthetic Values and Recreation Opportunities***

*Recreational and other land use activities will be managed to minimize impacts on stream corridor vegetation and water quality.*

***CONSIDERATIONS***

*Consider implementing a monitoring process to evaluate the success of the project.*

*Stream habitat management provisions should be planned in relation to other land uses that may impact stream habitat. Before designing and implementing instream habitat improvements, consider the known or expected problems within the watershed, such as: point and non-point source pollution, land management activities, and other watershed-related concerns. Any stream habitat management project is most effective when applied within the context of overall watershed conditions and with clear objectives for stream management goals.*

*Engineered instream structures such as flow deflectors may be considered to provide stream stability and/or habitat elements until the channel and adjacent riparian area can function as a habitat of complex stream structure in dynamic equilibrium. There are several options that can be used singularly or in combination to improve stream habitat. These include:*

*Through watershed planning, establish soil conservation, nutrient management, and pesticide management practices and other management techniques for non-point sources of pollution.*

*Reduce or manage excessive runoff due to watershed development.*

*Restore or protect riparian and floodplain vegetation and associated riverine wetlands.*

*Maintain suitable flows for aquatic species and channel maintenance.*

*Provide physical habitat components important to aquatic species such as sediment-free spawning gravel, boulders, large wood, resting pools, overhead cover, and stable banks.*

*Eliminate fish migration barriers such as improperly installed culverts.*

*Provide barriers/screens to exclude fish from water pumps, diversion ditches, etc.*

*Improve floodplain-to-channel connectivity including off-channel habitats.*

*Provide alternative streamside access for recreational use, livestock, and equipment.*

*Environmental Impact Concerns - Stream habitat management will serve to improve aquatic habitats and subsequently benefit threatened or endangered species or species of concern and other native aquatic species dependent on this environment. There may be short-term negative impacts when in-stream construction activities occur, i.e. sedimentation causing turbidity and siltation. Therefore, timing of project activity is extremely important to reduce negative impacts.*

*Consider the following in regards to water quantity and quality:*

*Effects on water budget.*

*Effects on channel erosion and the movement of sediment and soluble and sediment-attached substances that would be carried by runoff.*

*Effects on wetlands or water-related wildlife habitats.*

*Short-term and construction-related effects on the quality of water resources.*

*Effects on stream temperatures to provide desired effects for aquatic and wildlife communities.*

*Effects on the visual quality of water resources.*

## **PLANS AND SPECIFICATIONS**

*Plans and specifications shall be in keeping with this standard and shall adequately describe the details to apply the practice to achieve its intended purpose.*

## **OPERATION AND MAINTENANCE**

*An operation and maintenance plan shall be developed for all applications. The plan shall provide for periodic inspection and prompt repair should the application of practices cause streambank or streambed instability. All instream structural measures shall be evaluated on an annual basis.*

## **REFERENCES**

*Stream Corridor Restoration: Principles, Processes, and Practices. Federal Interagency Stream Restoration Working Group (FISRWG)(15 Federal agencies of the United States Government). Stream Corridor Restoration Manual, October 1998*